

CLAIM AMENDMENTS

1. (Currently Amended) An isolated DNA molecule encoding a cell cycle interacting protein or encoding an immunologically active and/or functional fragment thereof, wherein said cell cycle interacting protein binds to a cyclin dependent kinase (CDK) having a PPTALRE cyclin binding motif and wherein said isolated DNA molecule is selected from the group consisting of:

~~(a)~~ — DNA molecules

~~(aa)~~ (a) a DNA molecule comprising a nucleotide sequence encoding at least the mature form of a protein comprising the amino acid sequence as ~~given~~ set forth in SEQ ID NO: 8;

~~(ab)~~ (b) a DNA molecule comprising the nucleotide sequence as ~~given~~ set forth in SEQ ID NO: 7;

~~(ae)~~ (c) a DNA molecule comprising a nucleotide sequence hybridizing with the complementary strand of a nucleotide sequence as defined in ~~(aa)~~ (a) or ~~(ab)~~ (b) under stringent hybridization conditions of hybridization in 4X SSC at 65° C, followed by washing in 0.1X SSC at 65° C, or hybridization in 50% formamide, 4X SSC at 42° C, followed by washing in 0.1X SSC; wherein the nucleotide sequence encodes a protein comprising amino acids 96-118 of SEQ ID NO:8, allowing for up to four mismatches;
and

~~(ad)~~ (d) a DNA molecule comprising a nucleotide sequence encoding a protein having an amino acid sequence at least ~~[[60]]~~ 50 % identical to the amino acid sequence encoded by the nucleotide sequence of ~~(aa)~~ (a) or ~~(b)~~ (ab) ~~[[;]]~~ wherein the nucleotide sequence encodes a

protein comprising amino acids 96-118 of SEQ ID NO:8, allowing for up to four mismatches

~~(ae) comprising a nucleotide sequence encoding at least the domain binding to CDKs of the protein encoded by the nucleotide sequence of any one of (aa) to (ad); and~~

~~(af) obtainable by screening an appropriate library under the stringent conditions recited in (ae) with a probe having at least 17 consecutive nucleotides of the sequence set forth in SEQ ID NO:7 .~~

2. (Withdrawn) A method for identifying and obtaining cell cycle interacting proteins comprising a two-hybrid screening assay wherein CDC2a or CDC2b as a bait and a cDNA library of a plant cell suspension as prey are used.

3. (Withdrawn) The method of claim 2, wherein said CDC2a is CDC2aAt and CDC2b is CDC2bAt.

4. (Canceled)

5. (Currently Amended) [[A]] An isolated nucleic acid molecule of at least 15 nucleotides in length hybridizing specifically with a DNA ~~sequence~~ molecule of claim 1 or with a complementary strand thereof.

6. (Currently Amended) A vector comprising a DNA ~~sequence~~ molecule of claim 1.

7. (Currently amended) The vector of claim 6 ~~which~~ wherein the vector is an expression vector and wherein the DNA ~~sequence~~ molecule is operatively linked to one or more control sequences allowing ~~the~~ expression in prokaryotic and/or eukaryotic host cells.

8. (Currently Amended) A host cell ~~containing a~~ comprising the vector of claim 6 or 7 or a the DNA ~~sequence~~ molecule of claim 1.

9. (Original) The host cell of claim 8 which is a bacterial, insect, fungal, plant or animal cell.

10. (Previously Presented) A method for the production of a cell cycle interacting protein or an immunologically active or functional fragment thereof comprising culturing a host cell of claim 8 under conditions allowing the expression of the protein and recovering the produced protein from the culture.

11. (Withdrawn) A cell cycle interacting protein or an immunologically active or functional fragment thereof encodable by a DNA sequence of claim 1.

12. (Withdrawn) An antibody specifically recognizing the protein of claim 11 or a fragment or epitope thereof.

13. (Currently Amended) A method for the production of transgenic plants, plant cells or plant tissue comprising the introduction of a DNA ~~sequence~~ molecule of claim 1, or a vector of claim 6 or 7 into the genome of said plant, plant cell or plant tissue.

14. (Currently Amended) The method of claim 13 further comprising regenerating a plant from ~~said~~ the plant tissue or plant cell.

15. (Currently Amended) A transgenic plant cell comprising ~~[[a]]~~ the isolated DNA ~~sequence~~ molecule of claim 1 ~~which~~ is operably linked to regulatory elements allowing transcription and/or expression of the DNA sequence in plant cells.

16. (Currently Amended) The transgenic plant cell of claim 15 wherein ~~said~~ the DNA ~~sequence~~ molecule or ~~said~~ the vector is stably integrated into the genome of the plant cell.

17. (Previously Presented) A transgenic plant or a plant tissue comprising plant cells of claim 15.

18. (Currently Amended) The transgenic plant of claim 17 in which plant cell division and/or growth is enhanced compared to ~~the~~ a corresponding wild type plant and/or wherein the plant is less sensitive to ~~[[environmental]]~~ salt, nutrient deprivation, drought, or chilling, compared to ~~the~~ a corresponding wild type plant.

19. (Currently Amended) A transgenic plant cell which contains stably integrated into the genome a DNA ~~sequence~~ molecule of claim 1, or part thereof wherein the transcription and/or expression of the DNA molecule ~~sequence or part thereof~~ leads to reduction of the synthesis of a cell cycle interacting protein in the cells.

20. (Currently Amended) The plant cell of claim 19, wherein the reduction is achieved by at least one of an antisense, sense, ribozyme, co-suppression, dominant mutant effect ~~[[and/]]~~ or a knock out mutant in the ~~gene~~ DNA molecule.

21. (Previously Presented) A transgenic plant or plant tissue comprising plant cells of claim 19 or 20.

22. (Previously Presented) The transgenic plant of claim 21 which displays a deficiency in plant cell division and/or growth compared to the corresponding wild type plant.

23. (Previously Presented) Harvestable parts or propagation material of plants of claim 17 or 18 comprising plant cells of claim 15 or 16.

24. (Withdrawn) A regulatory sequence of a promoter regulating the expression of a nucleic acid molecule comprising the DNA sequence of any one of claim 1 or 4, said regulatory sequence being capable of conferring expression of a heterologous DNA sequence during various stages of the cell cycle.

25. (Withdrawn) A recombinant DNA molecule comprising the regulatory sequence of claim 24.

26. (Withdrawn) The recombinant DNA molecule of claim 25, wherein said regulatory sequence is operatively linked to a heterologous DNA sequence.

27. (Withdrawn) A host cell transformed with a regulatory sequence of claim 24 or a recombinant DNA molecule of claim 25 or 26.

28. (Withdrawn) A transgenic plant, plant tissue, or plant cell comprising the regulatory sequence of claim 24 or the recombinant DNA molecule of claim 25 or 26.

29. (Withdrawn) A method for the identification of an activator or inhibitor of cell cycle interacting proteins or their encoding genes comprising the steps of:

(a) culturing a plant cell or tissue or maintaining a plant comprising a recombinant DNA molecule comprising a readout system operatively linked to a regulatory sequence of claim 24 in the presence of a compound or a sample comprising a plurality of compounds under conditions which permit expression of said readout system;

(b) identifying or verifying a sample and compound, respectively, which leads to suppression or activation and/or enhancement of expression of said readout system in said plant, plant cell, or plant tissue.

30. (Withdrawn) A method for identifying and obtaining an activator or inhibitor of cell division comprising the steps of:

(a) combining a compound to be screened with a reaction mixture containing the cell cycle interacting protein of claim 11 and a readout system capable of interacting with the protein under suitable conditions which permit interaction of the protein with said readout system;

(b) identifying or verifying a sample and compound, respectively, which leads to suppression or activation of the readout system.

31. (Withdrawn) A method of producing a therapeutic agent comprising the steps of the method of claim 30 and synthesizing the activator or inhibitor obtained or identified in step

(b) or an analog or derivative thereof in an amount sufficient to provide said agent in a therapeutically effective amount to a patient.

32. (Withdrawn) A method of producing a plant effective agent comprising the steps of the method of claim 30 and synthesizing the activator or inhibitor obtained or identified in step (b) or an analog or derivative thereof in an effective amount sufficient to provide said agent in an effective amount suitable for the application in agriculture or plant cell and tissue culture.

33. (Withdrawn) A method of producing a therapeutic or plant effective composition comprising the steps of the method of claim 30 and combining the compound obtained or identified in step (b) or an analog or derivative thereof with a pharmaceutically acceptable carrier or with a plant cell and tissue culture acceptable carrier.

34. (Withdrawn) An activator or inhibitor of a cell division obtained by the method of any one of claims 30 to 32.

35. (Canceled)

36. (Canceled)

37. (Canceled)

38. (Canceled)

39. (Canceled)

40. (Canceled)

41. (Withdrawn) A method for improving the tolerance of plants towards suboptimal nutrient conditions, preferably the level of phosphate, by modulating PLP expression and/or activity.

42. (Withdrawn) A method for improving the growth of plants in normal conditions or suboptimal nutrient conditions, in particular levels of phosphate, by modulating PLP expression and/or activity.

43. (Withdrawn) A method for providing enhanced rate or frequency of seed germination comprising modulating PLP expression and/or activity.

44. (Withdrawn) Use of a PLP as a positive or negative selectable marker during transformation of plant cell, plant tissue or plant. procedures.

45. (Withdrawn) The use of claim 44, wherein selective agent is an antibiotic, preferably hygromycin.

46. (Withdrawn) The method of claim 45 wherein the antibiotic is hygromycin.

47. (Withdrawn) A method for using an isolated DNA molecule having the sequence set forth in SEQ ID NO:7 in marker assisted breeding, said method comprising:

(a) transforming a plant cell with the DNA sequence of claim 1 in order to produce a transgenic plant comprising the sequence of claim 1;

(b) cross fertilizing the transgenic plant of (a) with another plant or self fertilizing the transgenic plant of (a);

(c) using the isolated DNA molecule having the sequence set forth in SEQ ID NO:7 as a probe in order to detect the DNA sequence of claim 1 in progeny of the cross or self fertilized plants of (b).

48. (Withdrawn) A method for detecting the DNA molecule of claim 1 in a transgenic plant or progeny thereof, said method comprising using an isolated DNA molecule comprising the sequence set forth in SEQ ID NO:7 as a probe in order to detect the DNA sequence of claim 1 in said transgenic plant or progeny thereof.

49. (Withdrawn) A method for detecting in a plant an endogenous gene encoding a cell cycle interacting protein wherein said cell cycle interacting protein binds to a CDK having a PPTALRE cyclin binding motif, said method comprising using an isolated DNA molecule comprising the sequence set forth in SEQ ID NO:7 as a probe in order to detect the endogenous gene.

50. (Currently Amended) A method for the production of transgenic plants, plant cells, or plant tissue in which plant cell division and/or growth is enhanced compared to a corresponding wild type plant and/or wherein the plant is less sensitive to [[environmental stress] salt, nutrient deprivation, drought, or chilling compared to ~~the~~ a corresponding wild type plant which comprises introducing the DNA molecule of claim 1, or a vector of claim 6 or 7 into the genome of said plant, plant cell, or plant tissue.